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Anaemia

IDEAS INTO ACTION

Report of the International Seminar on Anaemia in South Asia

December 2 - 4, 1999
Kathmandu

Organised by

CHILD HEALTH INFORMATION NETWORK

(A partnership of Christian Medical Association of India, Child In Need Institute,
Centre for Health Education Training and Nutrition Awareness and Rural Unit for Health and Social Affairs)

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"Nearly two billion people in the world are anaemic and even more are iron deficient. WHO estimates that 43 per cent of all women and 34 per cent of all men are anaemic in developing regions. South East Asian countries have the highest prevalence of anaemia with almost 80 per cent of pregnant women in South Asian region being anaemic. In all regions, the prevalence of anaemia is higher in pregnant women than in non pregnant women."

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Edited by

K.S. Sebastian

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K.S Sebastian, Editor

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Introduction

It is with great sense of hope I am submitting this report to all South Asian friends who are involved in the field of health and development. Anaemia is a condition in which the red cells of the blood are reduced in number or volume or are deficient in haemoglobin, their oxygen carrying pigment. There are close to 100 different varieties of anaemia. Anaemia results from chronic or acute blood loss, increased destruction or reduced production of red cells.

The most noticeable symptom of anaemia is breathlessness and weakness. Anaemia is characterised by pallor of the skin, mucous membranes and nail beds. The treatment of anaemia includes supplying the missing nutrients in the deficiency anaemias, detecting and removing any causative factors and preventing a recurrence.

Latest estimates suggest that half the children in South Asia are anaemic. Only Pakistan has conducted a nation-wide survey of anaemia in children during the past decade. The negligence of the problem of anaemia by governments in South Asia has heavy consequences. Mental growth can be retarded by neurological damage and there is strong evidence to show a measurable loss of IQ points in anaemic children. In more severe cases child mortality increases. According to a recent report from WHO and UNICEF, anaemia of this scale lowers the productivity of the entire population in this region.

The most common cause of anaemia is low absorption of iron from food. Breastfeeding gives adequate iron for the first six months. But most weaning foods, including milk products and cereals, are low in iron unless specifically fortified. Increasing iron intake is only part of the answer. For example drinking tea with a meal reduces iron absorption, while eating meat or fruit rich in Vitamin C means that two or three times as much iron is absorbed.

As with Vitamin A deficiency, there are three possible solutions—changing cooking and eating habits, fortifying staple foods or distributing iron supplements in tablet or syrup form where iron deficiency anaemia is known to be a problem. UNICEF and WHO recommend simultaneous action on all three fronts (including supplementation for children aged six months to five years where anaemia is a problem.)

WHO and UNICEF are now working with governments to reach the goal of eliminating iron deficiency anaemia as a major problem by the year 2000. In this context we would like to take stock of the situation in South Asia. The International Seminar on Anaemia in South Asia has analysed the magnitude of the problem and examined the interventions by development agencies and governments through programmes and projects. Suggestions, that came out of this seminar, may help planners and policy makers to take appropriate steps in eliminating anaemia as a public health problem in South Asia.

K.S. Sebastian
Editor

Child Health Information Network (CHIN)

CHIN is a network of organisations involved in child health related activities. At present there are five partners of CHIN. They are:

- ❖ Healthlink Worldwide, London,
- ❖ Centre for Health Education Training and Nutrition Awareness (CHETNA), Ahmedabad
- ❖ Child in Need Institute (CINI), Calcutta,
- ❖ Christian Medical Association of India, (CMAI), New Delhi and
- ❖ Rural Unit for Health and Social Affairs (RUHSA), Vellore.

CHIN aims to increase access to appropriate information and to influence policies and practices for improving child health by mutual empowerment, synergy and expansion of the network model and involving a wider circle of groups and organisations who share the same vision and have the same concerns. Healthlink Worldwide, London publishes *Child Health Dialogue* and the partner organisations adapt it in their local languages as per the need to disseminate information about child health issues.

Partners of CHIN

Healthlink Worldwide

Healthlink Worldwide is a London-based health information non-governmental organisation (NGO) working in close partnership with governmental and non-governmental agencies in Africa, Asia, Latin America, the Middle East and more recently in Eastern Europe and Central Asia. Healthlink Worldwide works to improve the health of poor and vulnerable communities by strengthening the provision, use and impact of information about health and the determinants of health. Healthlink Worldwide combines skills and experience in information production and management in the context of training and continuing education in the health sector.

Services include providing technical support, training and consultancy on resource centre development, information systems and databases,publications and materials production and evaluation. Healthlink Worldwide also has various subject specialisms, such as AIDS and sexual health, child health, health management, disability and community-based rehabilitation. Activities include running a large public health resource centre and publishing and distributing newsletters, manuals and other health learning materials. Healthlink Worldwide works with more than 30 partner organisations to deliver practical training and education materials in printed and electronic form to nearly 2 million health and development workers worldwide.

Healthlink Worldwide believes that every person, whatever his or her economic or social position, has the right to good health. Healthlink Worldwide does this through specialist programmes.

These programmes include the following achievements:

- ❖ health information services and training for health workers in Tanzania and Namibia are being strengthened
- ❖ a post-graduate diploma course in primary health care is underway in the Middle East
- ❖ partner organisations in Africa, Asia and Latin America are collaborating to produce regional training and health learning materials and provide information services
- ❖ children in primary schools in New Delhi and Bombay in India are learning to make healthy choices
- ❖ regular, practical updates on AIDS and sexual health, child health, disability, and health care management are reaching nearly 2 million readers worldwide

Healthlink Worldwide's resource centre holds UK's largest collection of health learning materials from developing countries. Healthlink Worldwide also provides technical support to partner organisations and others in establishing and developing resource centres and information services.

The mission of Healthlink Worldwide is 'to improve the health of poor and vulnerable communities by strengthening the provision, use and impact of

information'. Heathlink Worldwide's strategic directions are to:

❖ use information to support the capacity building of health service providers and enable them to better respond to people's needs

❖ support new initiatives and materials development with other sectors (education, community development) in health-related activities

❖ build the information capacity of organisations that represent the interests of marginalised people to influence policy and practice affecting their health

❖ contribute to creating a supportive policy environment for the promotion of health, through the strategic use of information

In partnership with governments, non-governmental organisations and academic institutions in developing countries, Healthlink Worldwide seeks to use information and communication strategies to link research, practice and policy development, and to promote and develop strategies that take into account the many social, economic and cultural factors that cause ill health (including gender inequalities), and support people's rights to, and control over, their health.

Healthlink Worldwide also has a strong track record in producing practical information on a range of key health issues for health workers in poorly resourced settings in developing countries. Topics include HIV/AIDS and sexual health, safe motherhood, common childhood diseases, malaria and tuberculosis (TB), disability and CBR, and basic health management. Many of these publications are adapted by local partners into languages including French, Spanish, Portuguese, Hindi, Tamil, Chinese and reach targeted audiences of over 1.5 million.

Centre for Health Education, Training and Nutrition Awareness (CHETNA)

CHETNA is an Ahmedabad based Non-government support organisation working in the states of Gujarat, Rajasthan and some parts of Madhya Pradesh. CHETNA's mission is to assist in the empowerment of disadvantaged women, adolescents and children to gain control over their own, their families' and communities' health. CHETNA has adopted the holistic approach of the development, through which it addresses the issues related to health and development in the life span.

CHETNA is supporting Government and Non-Government organisations through its two resource centres, Child Resource Centre and Women's Health Development Resource Centre. CHETNA's main areas of intervention are :

❖ capacity Building of NGOs and GOs by organising trainings for head of the organisations and middle level functionaries

❖ developing and dissemination of IEC (Information Education Communication material)

❖ networking and advocacy on issues related to women and children's health and development.

Ben Lilavati Lalbhai Holistic Health Centre at CHETNA is providing holistic health services like counselling, health education, treatment for minor ailments and timely referral to the women and children of the slum areas living nearby our office.

The Child Resource Centre (CRC) of CHETNA works in three programmatic areas namely early childhood development (0-6 years), health, education and development of school age children and health and development of adolescents. The CRC has undertaken a variety of trainings, planning and evaluation of field based projects, dissemination of information through CHETNA's quarterly newsletter, publication of *Child Health Dialogue* in Hindi and Gujarati and developing need based IEC materials.

As an active member of CHIN, CHETNA adapts *Child Health Dialogue* in Hindi (10,000 copies) and Gujarati (5,000 copies) and publishes its adapted version entitled *Bal Swasthya Samvad.*

Bal Swasthya Samvad provides:

❖ Updated information and exchange on the prevention and treatment of childhood diseases

❖ useful reference material for medical and paramedical practitioners

Apart from this, as a network partner, CHETNA is involved in capacity building of NGOs on specific issues such as health communication, documentation and dissemination by organising workshops and training.

In order to achieve its mission, CHETNA regularly develops need based publications—primarily in Gujarati, Hindi and English languages. The material is field tested prior to production.

Christian Medical Association of India

CMAI is the national umbrella organisation of health care institutions and community health programmes of the Protestant and Orthodox churches in India and is involved in a wide spectrum of health and development activities, campaigns and training programmes all over the country.

CMAI began in 1905 as the Medical Missionary Association of India. In 1926 it was renamed as the Christian Medical Association of India. In the early years CMAI gave priority to combat diseases specific to tropics especially leprosy work. Later CMAI concentrated training in preventive medicine and strengthening medical institutions in India. In the 60's CMAI was actively-involved in promoting family planning. In 80's, CMAI was involved in promoting community based primary health care. In the 90's CMAI's pioneering work in the field of combating HIV/AIDS brought laurels to it from many quarters, including the Government of India. Today CMAI has grown up as an organization involved in promoting health and well being of all Indians and through it contributing towards the whole round development of the country and its people.

Objectives

CMAI aims at

- prevention and relief of human suffering irrespective of caste, creed, community, religion and economic status
- promotion of knowledge of factors governing health
- co-ordination of activities for training doctors, nurses, paramedics and others involved in the ministry of healing
- implementation of schemes for comprehensive health care and community welfare

Members

CMAI has 3000 individual members—doctors, nurses, allied health professionals, health administrators and chaplains.

It has 300 institutional members—hospitals, medical colleges, health centres and community health programmes.

Functional units

In order to run and co-ordinate various activities, CMAI has five Sections (viz. Doctors Section, Nurses League, Allied Health Professionals, Administrators Section and Chaplains Section) and two departments (viz.Community Health Department and Communication Department).

Activities of the Community Health Department (CHD)

The main focus of CHD activities is:

- building awareness on health related issues and problems
- training people for community health work
- programme development and consultancy services
- technical and general support programmes
- facilitating income generation activities
- adolescent girls projects in Madhya Pradesh and Bihar

The project trains villagers to help adolescent girls to deal with their physical and psychological needs and changes.

Programme to combat substance abuse

Conducts awareness workshops and training courses.

Comprehensive school health programme

Fourteen schools in three states (Andhra Pradesh, Madhya Pradesh and Karnataka) are chosen for a special programme on personal hygiene, nutrition and environmental health.

Physicians training in diagnosis and treatment of malaria.

In collaboration with National Malaria Eradication Programme of India, doctors in four states have been trained in early diagnosis, treatment and prevention of malaria.

AIDS desk

Information, guidance and treatment centres on HIV/ AIDS in hospitals.Volunteers are also trained in home based care of people with AIDS.

Women's and children's health and development Projects

CMAI is undertaking major development projects in five districts of Madhya Pradesh state for creating health awareness and improving access to quality health care by establishing health centres and empowering women by forming Mahila Mandals (Womens Groups).

In the Chotanagpur region of Bihar and Orrisa and in the North Eastern India, we have initiated micro-projects through local congregations belonging to five major Churches. Here the focus is on skill development and income generation to create tangible assets to the poor.

Activities of Communication Department (CD)

Communication Department provides professional and technical back up for CMAI's communication activities. It publishes journals and books for health education and for promotion of activities of healing ministry. The important among the journals are:

- *Christian Medical Journal of India*
- *Contact*
- *Health Dialogue*
- *Addiction News*
- *Rational Drugs*
- *Clipboard* and
- *Life for All*

The department also undertakes independent campaigns on AIDS awareness, palliative care and child hood illnesses through television and radio.

Activities of sections

Doctors Section organises formal training to doctors. Provides a forum for dialogue and debate on faith and ethics in medical work. Recent concerns include Rational Drug Use, Palliative Care and Family Life Education.

Nurses League works for high standards in nursing education consistent with Christian principles to promote quality nursing services, conducts nursing training of different levels through the Boards of Nursing Education recognised by Indian Nursing Council.

Administrators Section, *Allied Health Professionals* and *Chaplains Section* are actively involved in organising training programmes, seminars and workshops for professionals involved in health care, administration and pastoral care.

Rural Unit for Health and Social Affairs (RUHSA)

Rural Unit for Health and Social Affairs, better known by its acronym RUHSA was started by the 1400 bed Christian Medical College and Hospital in 1977. The focus of RUHSA's work at the community level today is on Primary and Secondary Health Care. It also organises Self help Groups and Vocational Training along with other welfare services.

RUHSA provides the following services to other organisations.

Training: Training is probably the service for which the largest number of individuals and organisations approach RUHSA today. Training Programmes are available in RUHSA Campus with a 12 month Diploma in Community Health Management and a one month Community Organisation and Development course in addition to a large number of five day workshops. The popular workshops are Project Formulation, Curriculum Development, Participatory Training Methods, Project Evaluation and Health Education. Besides the training in RUHSA Campus, extramural training is also organised at the host organisation based on their expressed needs.

Evaluation: In terms of input of RUHSA staff, evaluation would be the major area where services are provided to others. Evaluation is provided to both NGOs and Government. The most recent evaluations are Phase II evaluation of Shanthimalai Trust at Thuruvannamalai and Navjeevan Seva Mandal based in Ranipet with projects throughout India. RUHSA's evaluation focuses on indepth data based evaluation rather than empirical evaluation. The evaluations have been carried out in different states of India covering both health and development programmes.

Organisational Support Services: Incorporating consultancy services to training and evaluation, RUHSA is providing a package of services to few interested organisations for their own capacity development. These include building both the organisational capacity as well as the capacity of the individual staff members, so as to ensure the empowerment of the community. The relationship in this activity is drawn out over a number of years.

Documentation and library: RUHSA has one of the best libraries in social sciences and management areas among NGOs in South India with over 15,000 books and

a number of periodicals. This is available for research scholars to utilise for their studies.Along with our library we have been also able to bring out documentation of a variety of work in which RUHSA is involved.

Field project work: The experience of RUHSA in providing services to the community in this block is developed into a community laboratory. This is available for students from different backgrounds to come and spend periods ranging from 1-3 months and study in-depth in any particular area of interest. Some of the areas in which research studies are carriedout are income generation programme, problems and needs of adolescents, problems and needs of the aged etc.

Block placement: These programmes are specially suited for social work and health management students at the post graduate levels. Many social work departments of colleges send their students towards the end of the course for a block placement of 4 weeks duration to fulfil their University requirements. Most colleges of Tamil Nadu and few from Bombay and Orissa have utilised this service.

Research: Research has been focused in RUHSA right from the beginning. Much of the research is action based relating predominantly to issues in the area of health. The research is collaborative or multi centric in nature so as to make available comparative information with others. Some major research carried out so far are on Basal Metabolism, Growth Monitoring,Vitamin A deficiency, Killed Polio Vaccines Trial, Chronic Obstructive Pulmonary Diseases, Maternal Anthropometry, Social Indicators of Health and anaemia in Pregnancy.

Project appraisal: With a wide variety of experience gained, RUHSA staff are in a unique position to provide project appraisal to organisations interested in obtaining information about pre funding possibilities as well as monitoring of ongoing projects. This is also initiated with identifying the community needs assessment on behalf of the organisation involved.

Educational tours: Organising educational tours is a regular methodology adopted by RUHSA for its own students. Educational tours range from 5 days to 2 weeks. Experienced staff participate as co-ordinator of the programme and relate to the objectives of the sponsoring organisations. Based on this experience we have organised education tours for participants from Orissa and for participants of Bangladesh more recently.

Seminars and conferences: RUHSA has been involved in organising conferences and seminars at State, National and International levels. Some of the themes around which we have organised conferences are Community Epidemiology, Poverty, Kala Azar, Malaria Control, Pre -school Education etc.

Malaria control: Based on our cumulative experiences in Orissa, we have identified malaria to be the most serious problem causing mortality and morbidity. Following a conference organised in Orissa we have had human resource development for NGO personnel in identifying the strategies that are suitable for various sections of the community in Orissa.

Networking: RUHSA is involved and promotes networking in a number of areas. The current active networks in which RUHSA is involved are Tamil Nadu Voluntary Health Association, Indian Rural Energy Network, Child Health Information Network, Tamil Nadu, Kerala Nutrition Network etc. RUHSA has also actively promoted the ORISSA RUHSA Resource Unit, a network of NGOs in Orissa.

Information: The services provided in K.V. Kuppam is available regularly and is computerised. This has been retrieved periodically and available as information covering a population of over 110,000. This information is useful for comparing and planning in other areas. This information is also available to determine the impact of programmes and help in designing other similar programmes.

Community based survey: Conducting formal community based survey is a function for which RUHSA's training and experienced personnel are available. Some of the studies carriedout recently are status of women survey, nutritional survey for Tamil Nadu Integrated Nutrition Project, Anaemia and Iron deficiency survey among pregnant women, Prevalence of anaemia hookworm infestation among adolescents and KAP surveys on different diseases like TB, AIDS, Anaemia etc.

Vocational training and entrepreneurship development: While vocational training services are predominantly provided for the local population, from time to time, we are able to accommodate students who come from outside. However, the needs of accommodation and food have to be provided by the sponsoring organisations. Some of the organisations using these are the District Rural Development Agency, Solider Welfare Board and District Industries Centre for self employment programme.

Resource personnel: Qualified and experienced staff in a wide range of areas in health and development are available at RUHSA to be deputed for other organisations both on short term and long term basis. Many organisations including funding agencies have been using these personnel.

Publications: RUHSA is regularly bringing out scientific publications and encourages its partner organisations to bring out scientific publications of their work and experiences. In addition, RUHSA at present has brought out a book on adolescence, a booklet on Income generation programme, a quarterly newsletter in Tamil for Child Health Development, a booklet on anaemia in pregnancy in Tamil, a set of flash cards on anaemia in pregnancy and a booklet on health education in Oriya. Interested persons may obtain it free of cost.

RUHSA is always attempting to utilise its experience within K.V.Kuppam to share with others doing similar programmes in other parts of India. More recently they have identified the needs in parts of South Asia and Africa. RUHSA has very gradually moving in this direction.

Child In Need Institute (CINI)

Child In Need Institute (CINI) has been working towards 'sustainable health and nutrition development among women and children in need' for the last 25 years. It's major focus areas are safe motherhood and child survival, nutrition, reproductive health, adolescent health, gender relations & women's empowerment. CINI pursues this mission by providing services, education and training, information dissemination, conducting research and supporting policy development and practice. Today the organisation provides health care to needy women and children in rural and urban areas in Calcutta and South 24 Parganas through health clinics for children under five, reproductive health clinics for women, nutrition rehabilitation centres, mother sponsorship prgrammes, awareness programmes, training and counselling centres. The focus is on preventive and promotive aspects of health along with curative services.

Started in 1974 CINI with its motto of 'Tomorrow is too late' began with a focus on children but soon realised that the health and wellbeing of children is closely linked to that of women—as mothers and custodians of family's wellbeing. Thus CINI expanded its programme with a holistic and integrated approach to women's health in the early 80's. As the organisation evolved it was realised that CINI's greatest strength lies in its ability to respond to emerging health needs. As a result over the last twenty-five years CINI has diversified its work to include child spacing and most recently reproductive health encompassing adolescent sexual and reproductive health.

Since the mid 1990's, CINI has been a pioneer in making a departure from the vertical population stabilisation, family planning and safe motherhood programmes to a multidimensional reproductive health approach. Child health, nuturition and survival remain the major thrust areas, but efforts have been made to integrate it into a broader life cycle approach. The belief behind utilising the life cycle approach in women and child health is that a woman's health status during any phase of life impinges on the next phase. Implementing the RCH programme in an integrated manner, CINI hopes to go a long way in improving the overall health of women and that of society.

At the turn of the new millennium, the organisation seeks to refresh its vision and move forward with increased determination to make its aim of sustainable health and development a reality.

CHIN is presently based at CMAI. For further information you can contact CHIN Co-ordinator in the following address.

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Findings and recommendations of the International Seminar on Anaemia in South Asia

Magnitude of the problem

1. Anaemia prevalance is very high (unacceptably high) in the entire general population in South Asia, but the magnitude is the highest in pregnant women followed by adolescent girls, and pre-school children. The prevalance is higher than 50% in all these population groups. Thus millions of women, millions of adolescent girls and pre-school children (below 6 years) are anaemic, which is a very serious problem. One in five of all maternal deaths are attributed to anaemia.

2. Further data on prevalance is not a pre-requisite but the time now is for action.

3. The magnitude of the problem however needs to be placed in relation to the serious effects of anaemia, such as tiredness, fatigue, poor school performance that affects productivity and educability of the 50% of the population, high levels of maternal death and morbidity of various kinds, lack of energy even the basic minimum of activities.

4. Added to all this, anaemia is associated with the low birth weight, prevalance of which is as high as 30-40% in South Asia region.

5. Iron requirements are greatly increased during pregnancy resulting in women being precipitated into severe anaemia, the prevalance of which has been shown to be the highest in pregnant women.

6. Infants born to anaemic mothers become prone to anaemia at an early age, and are likely to suffer from, brain damage, in addition to being low birth weight.

7. The anaemic infants grow into adolescents, resulting in large number of anaemic pregnant women who in turn produce infants who are anaemic, thus creating an inter-generational cycle of anemic population who are inactive, perform poorly in school, earn far less and may mistakenly be labelled as lazy.

8. The magnitude and the serious developmental effects of anaemia needs to be made fully known to the policy makers and programme functionaries, through adequate and appropriate advocacy measures so that sufficient priority and resources can be made available for anaemia control programmes.

Prominent causes

Prominent causes of anaemia are:

1. Poor dietary intake in all age groups (child, adolescents, pregnant, lactating and menopausal women).

2. Frequent pregnancy.

3. Infections, infestations (malaria, hookworms).

4. Anaemic mother gives birth to babies with poor iron stores.

5. Delayed introduction of complementary food.

6. Poor accessibility of iron rich food (e.g. Gujarat).

7. Poor quality and implementation of iron supplementation under "anaemia control programme".

8. Lack of co-ordination between different sectors.

9. Inadequate IEC strategies.

10. Anaemia is also a social ill.

Gender discrimination (poor status of girl child, unequal power distribution, decision making power intrahousehold food distribution etc.)

11. Cultural habits and food taboos.

12. Early marriage and early pregnancy.

13. Peer pressures-junk food.

14. Poor environmental sanitation leading to diseases.

Micro and macro level interventions

We need both micro(community) and macro (govt.programmes) level interventions—an umbrella approach (comprehensive) is the best.

1. Food fortification–salt, rice, wheat, complementary foods etc.

2. Other public health measures, such as sanitation promotion, disease prevention hookworm, malaria etc.

3. NGO should not run parallel programmes but act as a catalyst by co-ordinating and co-operating with government functionaries.

4. Strong IEC component is the backbone of any programme. It should aim on behavioural changes for better nutrition and health.

5. Need to motivate the community and build up participatory approach and create a community demand. (individual, family and community - mother, child, adolescent and teachers).

6. There should be a concurrent monitoring and evaluation (process variables, practices and the impact).

7. Technologies should be promoted since they help in assessment, compliance and monitoring.

8. Convergence of services is required particularly among community workers.

Policy priorities

1. Nutritional anaemia control should be of top national priority especially for high risk groups of women, children (especially under 5) and adolescents.

2. The further intensified efforts to control malnutrition and anaemia should be integrated into the primary health care system duly strengthened for better accessibility of these quality services.

3. The well defined strategy for anaemia control should be widely disseminated up to the most peripheral functionaries and community for delivery and utilisation of available optimal services.

4. The countries to clearly define the partnership and ownership mechanism between the government, non-government /private and donor agencies as well as community for planning and implementation of the anaemia control.

Iron deficiency anaemia

◆ Mushtaq A. Khan

Iron deficiency anaemia (IDA) is the most prevalent nutritional deficiency worldwide. It is a major public health problem with adverse consequences especially for women of reproductive age and for young children. Over 90% of affected individuals live in developing countries. The consequences of IDA are numerous as iron plays a central role in the mechanism for oxygen transport, and is essential in many enzyme systems. Of greatest concern is that IDA in infants and children is associated with impaired immunity, physical and cognitive development. In this group, even mild anaemia can impair intellectual development. In adults, IDA is associated with weakness and fatigue, which reduces capacity of physical work and productivity. In pregnant women, it contributes to maternal morbidity and mortality, and increases the risk of foetal morbidity, mortality and low birth weight. Severe anaemia may be a contributory factor in up to 50% of maternal deaths, and is the main cause of up to 20% of maternal deaths in developing countries.

Iron deficiency and anaemia

Iron deficiency occurs when an insufficient amount of iron is absorbed to meet the body's requirements. This may result from inadequate iron intake, reduced bio-availability of dietary iron, increased need for iron (e.g., during growths of pregnancy) or chronic blood loss.

What iron does?

The body needs iron to produce haemoglobin, the protein in red blood cells responsible for carrying oxygen. Iron is also a component of the many enzymes essential for the adequate functioning of brain, muscle and the immune system cells.

A certain amount of iron is stored in the liver, spleen and bone marrow, iron deficiency develops as these stores are depleted and there is insufficient iron absorption. In anaemia, the iron deficiency is so severe that the production of haemoglobin is significantly reduced. The main symptoms and signs are paleness of the tongue and inside the lips, tiredness and breathlessness. Deficiencies of folic acid, vitamin A, ascorbic acid riboflavin and various minerals can contribute to anaemia.

Sources

Iron is found in liver, lean meats, eggs, whole-grain breads and molasses.

Magnitude of the problem

Nearly two billion people in the world are anaemic and even more are iron deficient. WHO estimates that 43% of all women and 34% of all men are anaemic in developing regions. South East Asian countries have the highest prevalence of anaemia, with almost 80% of pregnant women in South Asian region being anaemic. In all regions, the prevalence of anaemia is higher in pregnant women than in non-pregnant women. These updated estimates are based on available national prevalence data starting from 1970s, up to and including data from 1997, and using population data from 1995.

Supplementation policy for children

Full-term healthy infants who are exclusively breastfed until above six months of age are not at a high risk of developing anaemia. From six months onwards, the infant's iron needs must be met by the family diet. Rapid growth during this period increases the need for iron. In older children high prevalence of intestinal helminthes infections especially hookworms, increases the risk of iron deficiency. It is recommended to give oral supplements of iron—12.5 mg per day in six to nine months old and twenty to thirty mg daily for two to five years old.

Prof. Mushtaq A. Khan
is a well known paediatrician
based in Islamabad

Anaemia control–an Indian experience

◆ Amod Kumar

Problem of anaemia in Indian slums and villages is not much different from any other under-privileged area of South East Asian region. Anaemia control has been made a prominent component of MCH (now extended to Reproductive Child Health) programme. However there is a huge gap between the policy formation and its implementation. The grass root level health functionaries are not fully sensitised to it.

Anaemia control in India is facing following problems

Inadequacies of Health Care System: Primary Health Care System of India is one of the best in its design. However in reality, large areas of difficult access remain unattended. Also the system does not have any effective strategy to address problems of expanding urban slum population.

Another problem of Indian health system is 'poor motivation' of its team. It lacks enthusiasm, required to fight out the challenges posed by multiplicity of public health problems. Anaemia is easily forgotten in the midst of problems of over population and low immunisation coverage.

Utilisation of government health system

The utilisation of government health services remains low. It hampers success of any of the health care programmes. Large section of population uses various kinds of private and traditional health care systems. Success of anaemia control can be facilitated by effective involvement of these systems.

Gender issue

Poor status of women indeed is a major social etiological factor of anaemia. It should be tackled by all means including educational, economical and political empowerment of women. We, at our project areas have found that training of martial arts to the adolescent girls gives great boost to their self-esteem.

Estimation of haemoglobin in field areas

Non availability of a reliable, economical and feasible method of hemoglobin estimation makes it almost redundant at grass-root levels. Because of this both the health worker as well as the beneficiary remain unaware of the gravity of the problem.

The Community Health Department of St. Stephen's Hospital is using new WHO color scale (developed by Stott and Lewis) for haemoglobin estimation. It is a simple, inexpensive and reasonably accurate method, which can be carried out at the doorstep of patient by the ANMs. It has given a boost to the anaemia control activities of our programme.

Health policy

The policy makers of India should prioritise the health problems and allocate funds accordingly. Diseases like Hepatitis B and AIDS, though are important growing public health problems but can not match the loss of life and productivity caused by the anaemia. Unfortunately its control does not attract enough resources from the government's kitty.

Involvement of professional bodies

There are large professional bodies, which have strong influence on the government's policies and community perception. 'Indian Academy of Peadiatrics', 'Indian Medical Association' and 'Indian Association of Preventive and Social Medicine' are prominent names. These bodies can play important roles in mobilising public opinion and government commitment towards the anaemia control.

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Prevalence of anaemia among adolescent girls of rural Tamilnadu, India

◆ Jolly Rajaratnam, Rajaratnam Abel, J.J. Asokan and Paul Jonathan

This study was carried out as part of the baseline survey embedded in a larger study to prevent and control anaemia among pregnant women sponsored by Mother Care project funded by USAID.

Subject and methods

As part of a community trial carried out by RUHSA Department of Christian Medical College and Hospital (CMC&H), a baseline survey was carried out in its project area in Vellore District, Tamilnadu, South India by selecting 155 and 161 adolescent girls in the age groups of 13 to 19 year from K.V. Kuppam block and Gudiyatham block. A multistage sample was used to select these girls by choosing 20 panchayats from each block randomly from 39 and 42 panchayats of the two blocks respectively at the first stage. Then a systematic sample of one in 7 girls from each panchayat was selected at the second stage.

The socio economic status of these girls was identified by their community, type of roof, number of rooms they have in their homes, the availability of latrine, the family type, the family size, girls', mothers', and fathers' education and ownership of land. The demographic variables were age and age at menarche. Blood was drawn from 141 and 147 girls from K.V. Kuppam block and Gudiyatham block respectively. The haemoglobin (Hb) concentration was assessed by measuring anticoagulated venous blood and using the cyanmethemoglobin method. Hb test done at RUHSA Laboratory and 5% sample was sent to CMC&H for validating the test done at RUHSA. Nutritional status of the adolescent girls was obtained by measuring height, weight and mid upper arm circumference and these were measured using standard techniques.

Univariate analysis was done to estimate the mean, standard deviation and range of haemoglobin concentration in different ages, in different socio-demographic and economic groups and also with different nutritional status, according to height, weight, and arm circumference. Correlation analysis was used to determine the variables that are predictors for anaemia among adolescent girls in the rural area.

Results

The age of the girls ranged from 13-19 year with the man and SD of 15.64 yrs. (SD 1.65), 15.7 yrs. (SD 1.76) and 15.67 yrs. (SD 1.71) for K.V. Kuppam block and Gudiyatham block and both pooled together respectively. Of these, 29 girls did not attain puberty. The mean and SD of age at menarche was 13.59 yrs (SD 1.03) ranging from 10-18 years.

The prevalence of anaemia was 44.8% with severe anaemia being 2.1%, moderate 6.3 and mild anaemia 36.5%. There is a decrease in the prevalence as the age increases, however the difference is not statistically significant. The prevalence of anaemia was 40.7% in premenarcheal girls as compared to 45.2% in post manarcheal girls.

Also there is a reduction in the mean Hb as the age increases. A similar decreasing trend is observed with increasing age at menarche of the girls and also earlier the age at menarche, the higher their mean Hb. The mean Hb of premenarcheal girls was 11.63 g/dl (Sd 1.5) and that of post menarcheal girls was 11.52 g/dl (SD 1.54).

A significant ($P<0.001$) association was found between the girl's education and haemoglobin concentration. The difference in the mean Hb of girls with either no education or those who completed upto 5th standard and 6th to 8th standard is significant ($P<0.01$) and is also highly significant ($P<0.001$) for those above 9th standard. The mean Hb also increases significantly ($P<0.001$) as the girl's education increases. The difference in the mean Hb of girls whose mother's had no/ or primary education and education above 9th std is significant ($P<0.05$).

There is a decrease observed in the prevalence and an increase in the mean Hb as the father's education increases, however the difference is not significant.

Table 1: Prevalence of anaemia among adolescent girls according to their socio–demographic groups

Socio–Demographic Variable	N	Prevalences No	(%)	Mean Hb	SD	Sig Level
Age						
13-14	86	40	46.5	11.58	1.53	
15-16	101	46	45.5	11.53	1.43	
17-19	101	43	42.6	11.47	1.63	
Age at Menarche						
Not attained	27	11	40.7	11.63	1.47	
10-12	22	8	36.4	11.91	1.19	
13-15	191	84	44.0	11.53	1.59	
>=15	48	26	54.2	11.29	1.46	
Girls Education						
0-5 std	74	45	60.8	10.88	1.67	
6-8 std	115	50	43.5	11.61	1.46	P<0.01 (1 & 2)
>=9 std	99	32	34.5	11.92	1.35	P<0.001 (1& 3)
Mothers' Education						
0-5th std	221	109	49.3	11.41	1.50	
6-8th std	46	13	28.3	11.80	1.76	
>=9th std	21	7	33.3	12.19	1.08	P<0.05 (1& 3)
Fathers' Education						
0-5th std	183	89	48.6	11.40	1.57	
6-8th std	46	18	39.1	11.67	1.70	
>=9th std	59	22	37.3	11.81	1.21	

Those girls whose height was more than 145 cm had less prevalence (43.5%) and high mean Hb concentration (11.58 g/dl) and those had less than 145 cm height had more prevalence of 52.1% and less mean Hb of 11.27 g/dl. The differences were not statistically significant. The prevalence among girls whose weight was more than 38Kgs. was 47.5% with a mean Hb of 11.52g/dl. Those who weighed less than 38 kg had an anaemia prevalence of 42.9% with a mean Hb of 11.53g/dl. However the difference in the prevalence was not statistically significant. (Table II)

Table II: Prevalence of anaemia among adolescent girls of various nutritional status groups

Nutrition	N	No	Prevalence(%)	Mean	SD
1. Height (cms)					
<144.9	48	25	52.1	11.27	1.70
>145.0	237	103	43.5	11.58	1.50
2. Weight (kgs)					
<37.9	163	70	42.9	11.53	1.62
>38.0	122	58	47.5	11.52	1.41
3. Arm Circumference (cms)					
<22.9	140	66	46.4	11.46	1.52
>=23.0	145	63	43.4	11.59	1.55

Girl's education and mother's education are significantly (P<0.001) positively correlated with their Hb. In the multiple regression analysis also girl's education, mother's education and the family type were identified as predictors for haemoglobin concentration. None of the other socio economic variables and nutritional status were picked up.

Conclusion

This study has demonstrated that anaemia among rural girls of Tamil Nadu is also high as in other parts of the country. This indicates the importance of including adolescents in the risk group to improve their iron status and the need for planning intervention programmes that would increase the haemoglobin levels among adolescent girls through prophylaxis treatment, dietary modification and helminth control. Increasing the educational level of rural girls would also ensure safe motherhood.

Authors work with RUHSA

(Note: References available on request)

Prevalence of anaemia among school going adolescent girls of Kathmandu and an intervention trial with iron supplementation

◆ Kalpana Tiwari

Iron deficiency anaemia is a major nutritional problem in Nepal as shown by its high prevalence in pregnant women. However, only limited data are available on adolescent female population which is a demographic group for nutrition intervention prior to pregnancy. Besides low dietary intake of iron and its poor bio-availability, parasitic infestations can contribute substantially to anaemia prevalence in Nepal. The reported data on parasitic infestations among Kathmandu school children is 70-76%. It is therefore necessary to know the effect of antiparasitic treatment and iron supplementation on haemoglobin levels so that some guidelines can be worked out for a school based anaemia control programme.

Objectives

The major objective of the study was to assess the prevalence of anaemia in school going adolescent girls (10-18 years), their dietary intake and to test the deworming coupled with daily versus weekly iron supplementation through school system as the nutritional intervention programme to control anaemia.

Method

A total of 420 girls from four schools catering mainly to the students from middle and low income communities were enrolled for the study. The schools were randomly allocated to four treatments, namely, control with placebo supplementation, deworming alone, deworming followed by 60mg of ferrous deworming. Haemoglobin level of the subjects were estimated before and after the intervention as an indicator to evaluate the impact of iron supplementation. Three days food intake of the subjects at baseline was carried out using 24-hour dietary recall on sub-sample (N=80).

Results

Haemoglobin (Hb) estimating on all the subjects at baseline showed the prevalence of anaemia to be 60% (Hb<12g/dl) and severe anaemia (<7g/dl) was absent. Although, nutrient intakes were not grossly deficient, the intake of major nutrients such as energy, protein, calcium, iron, vitamin A and folic acid found to be lower than required amount. Deworming alone with single dose of Mebendazole (500 mg) was not effective in raising Hb levels. However, deworming plus iron supplementation daily as well as weekly increased Hb level substantially. In conclusion, the results demonstrated a high magnitude of the problem among urban adolescent girls and the feasibility of introducing the iron intervention through the existing infrastructure of school system.

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Adolescent girls as risk groups

◆ J. S. Asokan

Adolescence is a significant period of human growth and maturation, unique changes occur and many adult patterns are established. As part of a multicentric experimental study carried out by RUHSA Department of Christian Medical College and Hospital (CMC&H), a baseline survey was carried out in Vellore District, Tamil Nadu, South India by selecting 155 and 161 adolescent girls in the age groups of 13 to 19 year from K.V. Kuppam block and Gudiyatham block using a multistage sampling technique.

The prevalence of anaemia (Hb<12 g/dl) was 44.8% with severe anaemia (<8g/dl) 2.1%, moderate (8.0-9.0 g/dl) 6.3% and mild anaemia (10.0-11.99 g/dl) 36.5%. The prevalence of anaemia was 40.7% in premenarcheal girls as compared to 45.2% in post menarcheal girls. A significant (P<0.001) association was found between the girl's education and haemoglobin concentration. The difference in the mean haemoglobin concentration of girls with either no education or those who completed upto 5th std and 6th to 8th std is significant (P<0.01) and it also increases significantly (P<0.001) as the girl's education increases. The difference in the mean Hb of girls whose mother's had no education or primary education and education above 9th std is significant (P<0.05). Girl's education and mother's education are significantly (P>0.001) positively corelated with their haemoglobin concentration. In the multiple regression analysis also girl's education, mother's education and the family type were identified as predictors for haemoglobin concentration. None of the other socio economic variables and nutritional status were picked up. This indicates the importance of including adolescents in the risk group to improve their iron status and the need for planning intervention programmes that would increase the haemoglobin levels among control. Increasing the rural girls educational level would also ensure increased Hb and thus safe motherhood.

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Practical steps to deal with anaemia

◆ **Shanti Ghosh**

Anaemia is widespread among the population of India. Maximum information is available on pregnant women, young children, and more recently on adolescent girls. Almost 75-80% of pregnant women are anaemic with variable severity – almost 15% being severely anaemic (Hb>7 gr.). Death rates among these women are extremely high – 20% dying directly due to haemorrhage, contributing, significantly to maternal mortality rate, which is around 450-550 in India.

Pregnant women register too late during pregnancy, and so there is not enough time for much improvement to occur. Supply of iron folic acid (IFA) tablets is erratic and there is very little education regarding this, with the result that very few tablets are ingested, giving rise to the myth that IFA tablets do not improve anaemia during pregnancy. The answer is to register pregnant women early, and provide knowledge and information about the benefits of IFA, not only to the pregnant women, but to her husband, mother-in-law or any other adult in the family. Adolescents too, can learn a lot from this. Several NGOs who follow these guidelines have shown remarkable improvement in anaemia during pregnancy.

Infections and infestations that interfere with improvement of anaemia, such as malaria and hookworm infestation should be treated.

Even though Indian vegetarian diet has considerable amount of iron, it does not get absorbed because of phylates in the cereal-based diet. Absorption can be improved by adding foods rich in vitamin C to the meal. Tea consumed along with a meal also inhibits absorption of iron. Cooking in iron vessels promotes iron absorption. The situation regarding iron absorption is better among families that consume some non-vegetarian food.

Anaemia is a major cause of morbidity and mortality and every effort has to be made to intensify the programme.

Dr.Shanti Ghosh is a well known peadiatrition based in Delhi.

Life cycle approach to prevent anaemia

◆ **Subadra Seshadri**

Worldwide, there are 1 billion people who suffer from anaemia, mainly due to iron deficiency and 90% of all the anaemic individuals are to be found in the developing countries. Although some demographic groups are more easily prone to anaemia such as pregnant women, due to their vastly increased iron needs during pregnancy, anaemia affects all demographic groups and all segments of the population. In most South Asian countries 70% or more of pregnant women are anaemic, 50% of all reproductive age women and pre-school children also suffer from anaemia. Prevalence of anaemia is higher in areas which are hookworm endemic. It may be as high as 90% in children and women in areas where hookworms are highly prevalent. In regions where malarial parasite is of common occurrence, anaemia particularly in pregnant women (especially in first time pregnant women) is very high. Infants who are born with low birth weight (i.e. birth weight <2500 g) have poor reserves of iron and develop anaemia at an early age and thus are a high risk group.

Breast milk contains only small amounts of iron but the iron in breast milk is very well absorbed and therefore infants who are exclusively breastfed in early infancy are less likely to develop anaemia than the ones who are not. Full term normal birth weight infants can get adequate iron if they are exclusively breastfed for 6 months. Adolescence is another period in the life cycle when anaemia prevalence is high, as adolescence increases iron requirements. A rural study done on 1513 adolescent girls in the age group of 10-19 years by us found 61% to be anaemic. Therefore prevention of anaemia requires a life cycle approach and will need to be addressed as a priority issue as anaemia is known to result in poor school performance of children, poor working ability and low productivity in adults, not to talk of the increased pregnancy complications and increased maternal mortality associated with anaemia in pregnant women.

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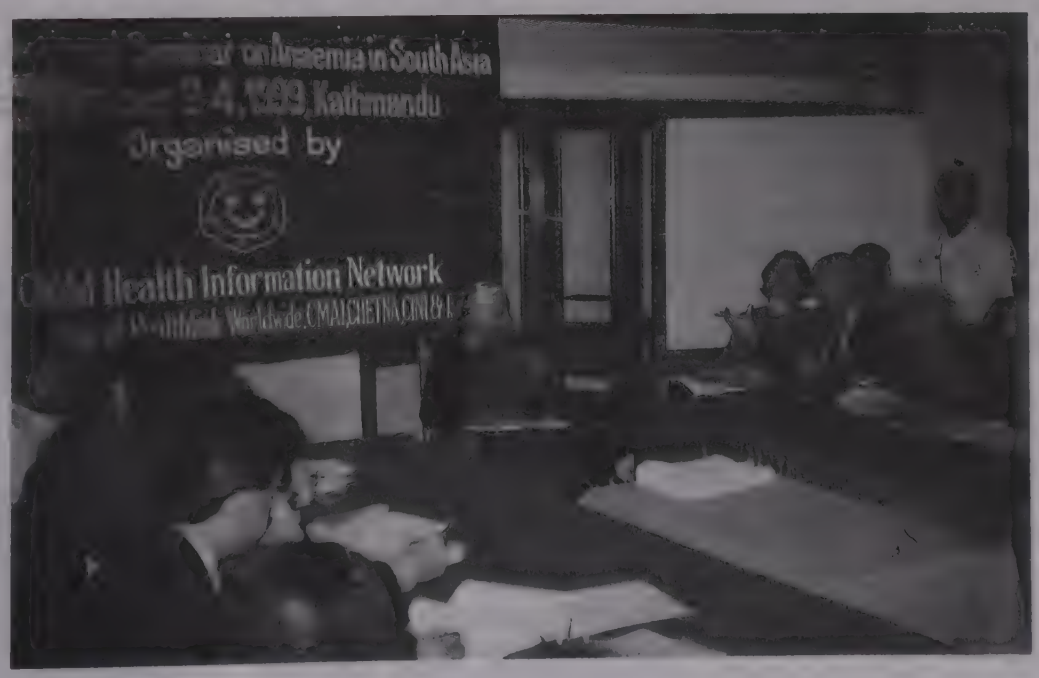

Role of NGOs in addressing the issue of anaemia

◆ **Karuna Onta**

Iron deficiency anaemia is known to be a very widespread problem in Nepal. Women who are living on marginal diets and have heavy work- loads and are severely anaemic have increased risk of complications during the birth of their babies. These babies are born with low iron stores and therefore their health is extremely poor.

Girls who are married at young age and forced to give births to babies repeatedly face horrible health consequences. The poor nutritional status in early childhood adds to the burden. Dietary intake during pregnancy remains to be the same as usual i.e. the last and least to get to eat. Workload, which is an average of 14-16 hours a day, is not reduced because of pregnancy and poor health status. The diets of girls especially pregnant are influenced not only by lack of knowledge of increased nutritional requirements but also by food beliefs and social restrictions within the family. All of these factors combine together to make it very difficult for most women to eat adequate amount of nutritious food during pregnancy.

To address the anaemia problem among pregnant women the government of Nepal has programmes of iron supplementation. All the pregnant women are encouraged to come for antenatal checkups to the health posts and sub-health posts and take iron tablets free of cost from the health service providers. This is the technical intervention that the government has sought to solve the problem of anaemia with limited attention on how women friendly the services are. The government of Nepal accepts anaemia among women and children as a problem and certain simple measures are practiced to reduce the problem of anaemia. However, these simple measures are limited to technical interventions.

Technical interventions are limited because distribution of iron tablets without further information on intake and management of side effects are ineffective. Poor communication between the service provider and the client does not assure appropriate intake of iron tablets even after taking it from the health centers. Daily food intake in terms of quality and quantity, food security, hookworms, other micro-nutrient deficiencies, gender discrimination and economic factors are not included strategically into programme design and implementation while addressing the problem of anaemia. The causes of anaemia ranging from physiological reasons to socio-cultural and to economic reasons are something to be looked into carefully. Unless the basic causes of anaemia are addressed, the problem cannot be solved. Multisectoral involvement is essential for this.

To look into the issue of women's health beyond physiology, several NGOs working in improving the overall status and particularly health of women have formed a network known as Safe Motherhood Network in Nepal since 1994. Its overall goal is to improve the status of women by contributing to Safe Motherhood through advocacy and awareness creation.

The role of the NGOs no doubt, is to supplement and complement the work of the government. It also should play a role of 'watch dog' and provide feedback to the government, when appropriate. No NGO network can attempt to or should take the responsibility of the sate, however they should keep their eyes and minds open to analyse any decision taken by the government. The Safe Motherhood network, a group of more than 60 NGO's, since past several years has been able to continuously raise the issues of gender equity, girl child education, delayed marriage, delay pregnancy, role of family and community in achieving better health for women through different types of community based programmes and interventions.

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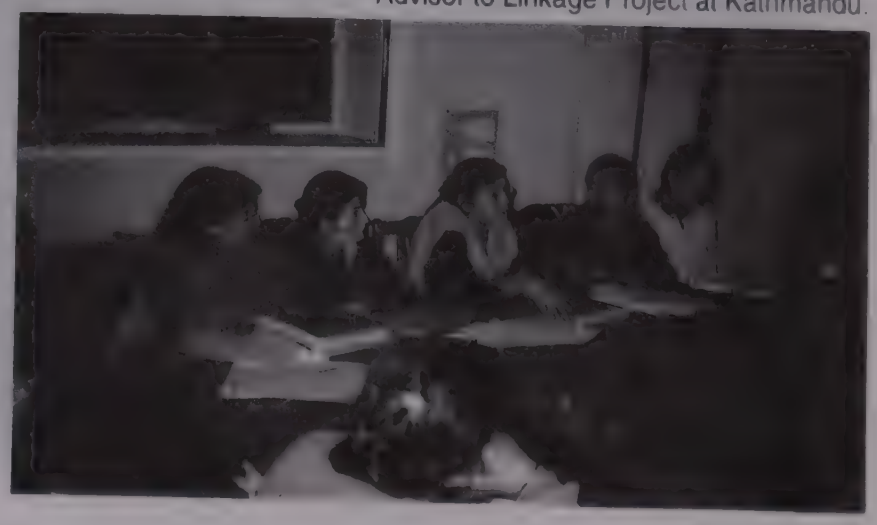

Anaemia in pregnancy - the experience at CINI

◆ Kate M Dunn, Rumeli Das &
Basari Ghosh

CINI (Child in Need Institute) was started in 1974 as a small under five clinic for malnourished children, it has now expanded to provide community based health programmes, regular clinics (including for reproductive health and antenatal care), an emergency ward and a nutrition rehabilitation centre for malnourished children.

CINI follows a lifecycle approach, with special emphasis on pregnancy, children up to 2 years old and adolescents; this approach has been shown to be the most appropriate way to tackle health problems in women and children. The main strategy comprises case management with individual follow up by health workers, behavioural change communication both in the clinics and in the community itself and link with other organisations.

Strategy for pregnant women

Case management

Pregnant women are identified as soon as possible by the village based health workers, and are given a health card that is maintained through out their contact with CINI.

Women in the local area are encouraged to come to the weekly antenatal clinic provided at CINI, they are encouraged to attend at least three antenatal clinics, and may attend up to eight. For areas far from the CINI campus, fortnightly village health posts are held (encompassing antenatal check-ups) which technicians attend, these visits are financed by CINI.

The checks during the first trimester include blood haemoglobin levels to detect anaemia; the haemoglobin percentage is recorded on the health card to facilitate follow-up. Anaemia is defined as a haemoglobin percentage of below ten grams. If an anaemic woman is identified, she is either referred to the CINI clinic or to the local primary health centre (PHC), where iron and folic acid supplements (dried ferrous sulphate 335 mg (approx. equivalent to 100mg ferrous iron) and folic acid 0.5 mg) are given, along with advice on why they need to take them and how to take them.

The health workers visit the women in their homes throughout the pregnancy, and maintain the information on the cards, such as pregnancy weight gain and maternal health, they may also give further supplements where necessary, and ensure that the supplements are being taken appropriately. The health workers are trained to detect the clinical signs for anaemia, if mild anaemia is detected they give specific advice to the mother on their diet, and in cases of suspected severe anaemia, they will refer the woman to the CINI clinic or the PHC for further treatment. From five months onwards, the health workers determine from the woman's history whether they are likely to be suffering from worm infestation or malaria, if an infection is suspected, the woman is referred to the CINI clinic or PHC for treatment. Preliminary findings from a pilot study in the area show that most women are suffering from roundworm infestation, but the prevalence of infestation by hookworms is relatively low.

Behaviour change communication (BCC)

CINI has a wealth of materials and information used in BCC, such as games, videos, posters and leaflets, and these materials are utilised at all levels of intervention. Actually changing the health behaviour is known to be more effective than mere treatment or advice. At the antenatal clinics, BCC material is used including information on a health diet, ensuring that the pregnant women take all the necessary vitamins and minerals (including iron) and personal and environmental hygiene. The field based health workers also visit the women and their families in their homes, and give individual counselling to reinforce the messages they have already received. Group meetings are regularly held in the villages, both women's groups and men's groups, where information is disseminated to the whole community including nutrition during pregnancy, anaemia, and personal and environmental hygiene. In addition to this, village based camps are held, such as adolescent camps and reproductive health camps; these activities raise the overall level of awareness in the community further reinforcing the BCC messages.

Linkage

CINI ensures that people in the community are aware of all the services available to them, apart from those

provided by CINI, and referrals are made to these other services where necessary. Pregnancies identified as high risk either by the health worker or within the antenatal clinic at CINI may be referred to the PHC or to a government or private hospital. CINI arranges meetings with the local Panchayats, where they disseminate information on health and hygiene, and specific issues are discussed.

Outcomes

The services provided by CINI are accepted in the community and are well utilised. The early identification and registration of pregnant women in the CINI area is increasing (from 16% in 1997-8 to 52% in 1998-9), an improvement in the food and nutrition behaviour of pregnant women has also been seen. The percentage of women having three or more antenatal visits is high and increasing, with 81% reaching this target during 1998-99.

A small pilot study recently carried out at CINI collected prospective information about 29 pregnant women registered at CINI, and then recorded the circumstances of the birth of the child. In addition, information was obtained from a continuous case series of 50 mothers on CINI's routine monitoring database, information on the anaemia level of the woman had to be specially sought for this study. The first trimester mean haemoglobin percentage was 9.7g in both of these studies, and the mean birthweight of the infants in both studies was 2.7kg. The results from the studies are presented in table 1.

Table 1: Blood haemoglobin by birthweight

Haemoglobin %	N	Mean birthweight (kg)
7.00 to 7.99g	8	2.9
8.00 to 8.99g	20	2.6
9.00 to 9.99g	17	2.7
10.00 to 10.99g	18	2.6
Greater than 10.99g	16	2.8
Total	79	2.7

From this, the prevalence of first trimester anaemia (haemoglobin % less than 10g) in this group of pregnant women can be calculated as 57% (95% confidence interval 45% to 68%). From the table there is no clear corelation between birth weight and first trimester anaemia in this group of women. Further analysis shows that in anaemic women, the prevalence of low birth weight (<2.5kg) was 18.6%, compared to a prevalence of 12.5% in the non-anaemic women, the difference between these proportions is not statistically significant at the 95% confidence level.

In the pilot study the women were questioned about whether they had taken iron and folic acid supplements, all but one of the women questioned indicated that they had taken these supplements, this one woman was not anaemic.

In this sample, there was one neonatal death for which congenital malformation was attributed as the cause, this would not be expected to be related to anaemia or iron and folic acid supplements. There were no maternal deaths in this sample. The mean pregnancy weight gain in this group was only 6kg, and only 3 women had a weight gain of 10kg or above, these three women did not have anaemia and had children with normal birth weight.

Discussion

At first sight the finding of little or no corelation between anaemia and birth weight might appear to be erroneous (perhaps due to a non-representative sample), as the association between anaemia and low birth weight is well documented. However, the proportion of births below 2.5kg in our study sample was 16%, which is the same as the figure recorded by the monitoring unit for the total CINI area. This provides good evidence that the sample used here is representative of the pregnant women in CINI's area as a whole.

An alternate explanation for the lack of clear association between anaemia and birth weight is that the anaemia in the pregnant women had been successfully treated through CINI's intervention strategy. If this were true, no corelation would be seen between first trimester anaemia and low birth weight, as is the case here. Further evidence for this is provided by the high proportion of women who reported that they had taken iron and folic acid supplements during their pregnancy.

In summary, CINI is working to identify anaemia in pregnant women, and treat the anaemia if identified. There is some evidence that this intensive intervention strategy is having a beneficial effect in terms of the birth weight of the children. However, the sample used here is relatively small, and further investigation of larger numbers of pregnant women is needed to clarify the situation.

Authors work with CINI

RUHSA'S experience in anaemia control

◆ V Joseph

Information, Education and Communication(IEC) formed an important strategy in a USAID funded project to decrease the prevalence of anaemia among pregnant women. Qualitative data was collected using focus group discussions and key informant interviews with various cadres of health staff of Government, RUHSA and the community to identify the local words used and their perceptions about anaemia.

The Tamil equivalent word for anaemia 'Iron Soghai' was not known to the community. Instead they express the problem of anaemia with the following words 'Iratham illai', Iratham sundipochu', 'Udambu veluppu', Vellai kaamaalai', 'Oodhu kaamaalai', Varattu kaamaalai'. The people did not consider anaemia as a disease, instead it was considered as a problem during pregnancy that every woman had to go through.

During intervention the following IEC materials were developed: 1. Handbill with message on anaemia. 2. Flash cards 3. Booklet 4. Video cassette 5. Audio cassette with songs. Different strategies were used to disseminate the messages on anaemia : 1. One to one communication. 2. Group approach was adopted in the community and during the mobile clinics. A curriculum based approach was used in the communication process for behaviour modification. Proper communication was adopted while issuing the iron tablets and mebendazole relating the tablets with anaemia and deworming in the intervention area.

A significant increase ($P < 0.001$) in the knowledge of definition of anaemia, signs and symptoms, causes, consequences, prevention of anaemia was observed. The knowledge of foods that enhances iron absorbtion was also significantly higher ($P < 0.001$) among the women in the intervention area. The use of flash cards was stated as the effective method of communication. One to one approach was identified as the best approach and the Family Care Volunteer (FCV) as the effective communicator. The continuous training received by the FCVs to use the flash cards and reach out each pregnant women in their target area made the above changes possible.

IEC Materials prepared and used

i. Hand bill of messages on anaemia
ii. Flash cards set on anaemia in pregnancy
iii. Booklet on anaemia in pregnancy
iv. Audio cassette with 8 songs and commentary
v. Video on anaemia (20 mts)

Hand bill messages used

1. Anaemia is caused by iron deficiency in blood and it is common among pregnant women.

2. Severely anaemic pregnant women will have whiteness inside the eyelids, cheeks and tongue, spoon shaped nails, breathlessness and tiredness.

3. Anaemia during pregnancy may cause abortions, still births, pre maturity, maternal deaths and most important delivery of low birth weight babies.

4. Normal food has sufficient among of iron. Intake of less quantity of food during pregnancy causes anaemia. Hence pregnant women should eat more food during pregnancy at least 4 to 5 times a day.

5. Consumption of tea or coffee soon after meals with affect iron absorption in blood.

6. Presence of hookworm in your stomach will cause anaemia. Hookworm infestation can be treated by taking tables which is given for 3 days, two tablets a day. Since hookworm enters through the feet this can be prevented by wearing slippers while going out.

7. Pregnant women should start consuming iron tablets one per day from the beginning of 4th month until delivery. Iron tablets are available at RUHSA Hospital, RUHSA Peripheral Service Unit (PSU) clinics, Primary Health Centers (PHC), Government sub-centres, Village Health Nurse (VHN) and from private medical shops.

Mr. V Joseph is a Rural Community Officer in RUHSA and works at grass root level in Anaemia Control

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What CHETNA is doing to control anaemia?

◆ Illa Vakharia

In developing countries, anaemia is very common in children adolescents and women, It is estimated that about 70% of women are anaemic, with varying degrees of severity.

At first glance we see anaemia as a physical illness, caused by lack of iron and protein. Hookworm or malaria can exacerbate anaemia, causing severe illness.

Anaemia is a complicated problem, characteristic of our harmful social practices. Anaemia is a result of gender discrimination faced by woman from childhood to old-age. This can be a major contributing factor to anaemia.

Priority to the male child, unequal distribution of labour, resources and decision making poverty,which leads to the birth of under-weight children, marriage of girls at a young age, and girls eating less and last at meal times etc. lead to weakness, malnutrition and anaemia.

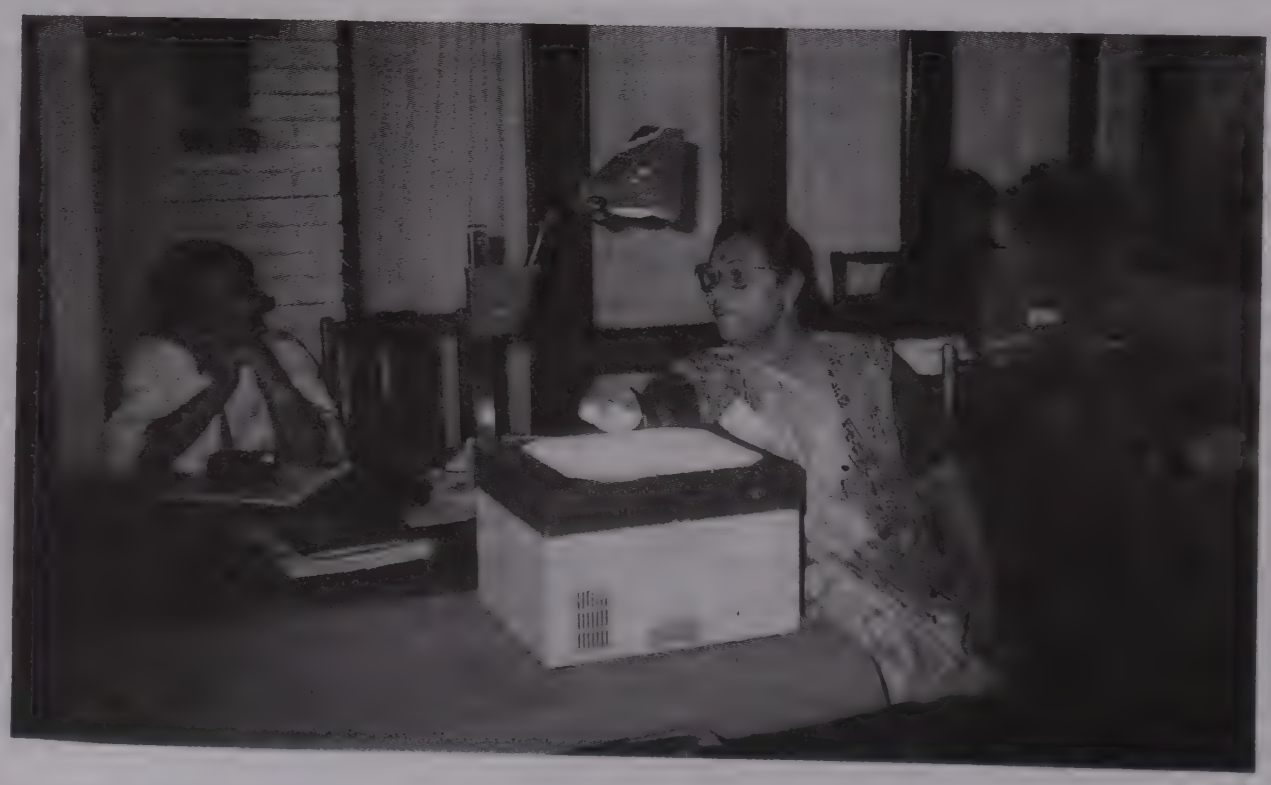
Anaemia means that women are becoming ill and dying in pregnancy and childbirth, and living with tiredness and illness, often women consider this tiredness simply as a part of life.

What CHETNA is doing?

Advocating for improvement of health status along with social status, and capacity building among health functionaries.

In addition, to create awareness about women's social status as the root cause of anaemia, CHETNA has developed the anaemia kit which contains technical information about anaemia, role plays and songs depicting the status of women, and messages for mothers, mothers-in-law and family.

Ms.Illa Vakharia
works with Chetna



Health education as an intervention for anaemia educating the educator

◆ **Tejinder Singh**

Health education is an important strategy for reducing the prevalence of anaemia in the community. However, very little attention is being paid to prepare the physician in the art and science of health education. The students have to learn it with trail and error or emulate their teacher, who themselves may not be well versed in the art and science of health education.

Agencies like WHO have repeatedly emphasised the need for teaching and training for health education. The Medical Council of India in its recent guidelines on graduate medical education has also stressed the need for this. Unfortunately, the current medical curricula don't pay any attention to this.

The behavioural model of health education is very different from the medical model and unless the physician is well versed with relevant aspects of sociology, psychology, adult learning and pedagogy, it may be very difficult for them to function as effective health educators. The medical school curricula need to take these into consideration. The teaching and training for health education should extend for at least 12 hours of which 6 hours should be devoted to practical training, in the field. The pro-- ficiency should also be assessed, especially during the process of internal assessment.

The word doctor has been derived from a Latin root, 'doceo', meaning I teach. The medical graduates of today must be prepared to effectively discharge this responsibility.

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